REMARKS / ARGUMENTS

I. General Remarks and Disposition of the Claims

Please consider the application in view of the following remarks. Applicants thank the Examiner for his careful consideration of this application, including the references that Applicants have submitted in this case.

At the time of the Office Action, claims 1, 3-5, 10-14, 21, 24-29, 100-106, 111-127, 130-145, 147, and 149-151, and 155-157 were pending in this application. Claims 100-106, 111-126, 133-136, 142, 143, 149-151, and 155-157 have been withdrawn from consideration. Claims 1, 3-5, 10-14, 21, 24-29, 127, 130-132, 137-141, 144, 145, and 147 stand rejected. Claims 1, 25, 28, 106, 124, 126, 127, and 145 have been amended herein. Applicants respectfully request reconsideration in light of the amendments remarks contained herein.

II. Remarks Regarding Rejections Under 35 U.S.C. § 112, first paragraph

Claims 1, 3-5, 10-14, 21, 24-29, 130-132, 137-141, 144, 145, and 147 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. With respect to this rejection, the Office Action states:

> The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Independent claim 1 and 127 have been amended in Response to recite the polymer having the specified molecular weight limitation "once synthesized". There is insufficient written description support for this limitation in the claims.

(Office Action at 3-4.) Applicants respectfully disagree.

Applicants note that the specification as originally filed states, "The hydrophobically modified water-soluble polymer formed from the above-described polymerization reaction may have estimated molecular weights in the range of from about 100,000 to about 10,000,000." Specification, ¶ [0023]. A person of ordinary skill in the art would realize that this disclosure describes polymers that may have a molecular weight in the range of 100,000 to about 10,000,000 once synthesized by one of the described polymerization reactions, which would be different than polymers having molecular weights below 100,000 that are, for example, later crosslinked to obtain the higher molecular weight. Therefore, Applicants

respectfully submit that the specification does provide sufficient written description for support of this limitation and respectfully request the withdrawal of this rejection.

III. Remarks Regarding Rejections Under 35 U.S.C. § 112, second paragraph

Claims 1, 3-5, 10-14, 21, 24-29, 130-132, 137-141, 144, 145, and 147 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. With respect to this rejection, the Office Action states:

> In addition to this limitation having insufficient written description support in the present specification as discussed in the immediately preceding paragraph, it is uncertain from the claim language and the specification as to how this limitation is to be interpreted. This new limitation is unclear as to whether it should be interpreted as the polymer attaining the recited molecular weight in the subterranean formation (that is, the hydrophobically-modified polymer is formed from a hydrophilic polymer and a hydrophobic compound *within* the formation); or, alternatively, as to whether Applicant intended this limitation to limit said polymer to be formed outside the formation and introduced into the formation immediately upon attaining this molecular weight "once synthesized".

(Office Action at 3-4.) Applicants respectfully disagree.

Applicants note that the specification as originally filed states, "The hydrophobically modified water-soluble polymer formed from the above-described polymerization reaction may have estimated molecular weights in the range of from about 100,000 to about 10,000,000." Specification, ¶ [0023]. As such, this limitation should be interpreted as that the hydrophobically modified water-soluble polymer has a molecular weight in the range of about 100,000 to about 10,000,000 once synthesized by an appropriate reaction (*i.e.*, it obtains this molecular weight once it is formed by the reaction, and not at a later time). Whether the polymer is formed outside the formation and introduced into the formation immediately upon attaining this molecular weight or whether the polymer attains the recited molecular weight in the subterranean formation is irrelevant. Therefore, Applicants respectfully submit that the specification does particularly point out and distinctly claim the subject matter which Applicants regard as the invention and respectfully request the withdrawal of this rejection.

IV. Remarks Regarding Rejections Under 35 U.S.C. § 102(e)

Claims 1, 3-5, 10-14, 21, 24-29, 127, 130-132, 137-141, 144, 145, and 147 stand rejected under 35 U.S.C. § 102(e) as being anticipated by PCT Application Publication No. WO 03/056130 to Couillet *et al.* (hereinafter "*Couillet*"). With respect to this rejection, the Office Action states:

> Couillet discloses a method for fracturing/treating a subterranean formation to substantially alter the fluid flow (permeability) and/or surface characteristics of the formation, said method including injecting into the formation an aqueous fracturing viscoelastic composition containing a water-soluble hydrophobically-modified polymer having hydrophobic chains of approximately 12-24 carbons and a molecular weight between 10,000 and 10,000,000 *g/mol.* (Abstract; page 1, lines 1-24; page. 4, line 10 to page 5. line 22; page 8, lines 26-32; page 11, line 28 to page 12, line 19; page 13, lines 5-9; page 19, lines 18-32; *See, e.g.,* Examples 12-14 disclosing studies of the leak properties (fluid-loss permeability) of sample drilling fluids)
>
> Couillet further discloses that the polymer backbone can be a polysaccharide or a derivative thereof, such as chitin or chitosan, having a molecular weight around 100,000 to 500,000 g/mol; wherein the chitosan can be modified via an acylation reaction (i.e. formed by an alkylation reaction of a chitosan hydrophilic backbone involving an alkali halide, such as an alkyl chloride). (Page 12, line 21 to page 13, line *31; See* Example 10 and Figures 15-16 disclosing a drilling fluid comprising from about 1 to 10% modified chitosan having an 11-carbon hydrophobic side chain)
>
> Examiner notes that Couillet discloses chitin, chitosan and modified chitosan via acylation/alkylation with an alkyl halide as a polymer compound added to the formation. *(See,* instant claims 5 and 6 reciting chitosan and alkyl halide as the hydrophilic polymer and hydrophobic compound, respectively.) Consequently, Couillet is disclosing using in the method of treating a formation a RPM polymer compound as encompassed by the instant claims with "sufficient specificity".
>
> Although Couillet may not expressly disclose "diverting at least a portion of the aqueous injection fluid to another subterranean zone" as recited in independent claim 1, Couillet discloses treating a formation with the same relative permeability modifier (RPM) polymer compound as encompassed by the instant claims and thereby should possesses the same physical properties/effects. Accordingly, the RPM used in the method disclosed in Couillet should "divert" a portion of the fluid to another surface of the subterranean formation upon the addition of

> said RPM polymer compound in Couillet's method of treating/fracturing a formation because said RPM disclosed in Couillet is encompassed by that recited in the instant claims.
>
> Thus, the claims are anticipated by Couillet.

(Office Action at 5-7.) Applicants respectfully disagree. Applicants respectfully submit that the cited reference does not disclose each and every limitation of claims 1, 3-5, 10-14, 21, 24-29, 127, 130-132, 137-141, 144, 145, and 147, as required to anticipate these claims under 35 U.S.C. § 102(e). *See* MPEP § 2131.

In particular, with respect to independent claims 1 and 127, *Couillet* fails to disclose the element of "performing an injection operation in a subterranean formation penetrated by at least one injection well and at least one production well." Rather, the operations of *Couillet* are directed to fracturing operations and not to injection operations performed in a subterranean formation penetrated by at least one injection well and at least one production well. *See Couillet*, page 1, lines 1-5. As such, the cited reference does not anticipate these claims.

Therefore, Applicants respectfully assert that independent claims 1 and 127 and their dependent claims are not anticipated by *Couillet*. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 1, 3-5, 10-14, 21, 24-29, 127, 130-132, 137-141, 144, 145, and 147.

V. Remarks Regarding Rejections Under 35 U.S.C. § 102(b)

Claims 127, 130-132, 137-141, 144, 145, and 147 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0013871 by Mallon *et al.* (hereinafter "*Mallon*"). With respect to this rejection, the Office Action states:

> Mallon discloses preparing a modified cellulose/polysaccharide ether by subjecting the cellulose ether sodium salt to electrodialysis and reacting with a base or salt to form a product that has few impurities and is thereby low polluting; wherein the base or salt can be, e.g., a chloride of up to thee carbons; and wherein the polysaccharide starting material can be chitosan or chitin. (Page 1, [0004] to [0008] and [0018]; page 2, [0024]; page 4, [0060]) The molecular weight of the for the polysaccharide is between 10,000 and 2 million grams/mol (page 4, [0061]) and a particular derivatizing agent for modifying the polysaccharide are alkyl halides, such as ethyl chloride or methyl chloride (page 4, [0062]).
>
> Mallon further discloses that a typical industrial application for the polysaccharide ether is in oil field drilling and fracturing

processes, wherein the modified polysaccharide can serve as a viscosity adjuster or suspension aid (page 6, [0076]) and wherein said polysaccharide can be present in a composition from about 0.05 to 3% by weight (page 6, [0080]). Accordingly, because Mallon is disclosing adding to a drilling process in a subterranean formation the same compound (alkylated chitosan) as the elected species for the hydrophobically-modified polymer recited in the claims (which would, of course, inherently have the same physical properties), Mallon is thereby disclosing a method of performing an injection operation in a subterranean formation by adding an RPM polymer compound in accordance with the instant claims with sufficient specificity.

Although Mallon may not explicitly disclose "diverting at least a portion of the aqueous injection fluid" as recited in independent claim 127, because Mallon discloses treating a formation with the same relative permeability modifier (RPM) polymer compound as encompassed by the instant claims (which would possess the same physical properties/effects), then the method of drilling/treatment disclosed in Mallon must inherently "divert a portion of the aqueous injection fluid" to another subterranean formation zone upon the addition of said RPM polymer compound in Mallon's method of introducing a fluid into a formation.

Thus, the claims are anticipated by Mallon.

(Office Action at 7-8.) Applicants respectfully disagree. Applicants respectfully submit that the cited reference does not disclose each and every limitation of claims 127, 130-132, 137-141, 144, 145, and 147, as required to anticipate these claims under 35 U.S.C. § 102(b). *See* MPEP § 2131.

In particular, with respect to independent claim 127, *Mallon* fails to disclose the element of "performing an injection operation in a subterranean formation penetrated by at least one injection well and at least one production well." Rather, the operations of *Mallon* are directed to oil field drilling and fracturing applications and not to injection operations performed in a subterranean formation penetrated by at least one injection well and at least one production well. *See Mallon*, ¶ [0076]. As such, the cited reference does not anticipate this claim.

Furthermore, with respect to independent claim 127, *Mallon* fails to disclose "a water-soluble relative permeability modifier that comprises ***a hydrophobically modified polymer***." Although *Mallon* may disclose reacting chitosan with a salt having up to three carbons, *Mallon* fails to disclose a "hydrophobically modified" polymer as defined by

Applicants. Applicants have defined "hydrophobically modified" to refer to the incorporation into the hydrophilic polymer structure of hydrophobic groups, wherein the alkyl chain length is from about 4 to about 22 carbons. (*See* Specification, ¶ [0014].) As the alleged hydrophobic compounds of *Mallon* comprise up to three carbons, their incorporation into a hydrophilic polymer would not constitute hydrophobic modification. *See Mallon*, ¶ [0018] ("In addition, 'base' and 'salt,' as used herein, refer to the hydroxides, chlorides, carbonates or lower carboxylates having up to 3 carbons."). Therefore, Applicants respectfully submit that *Mallon* fails to disclose a water-soluble relative permeability modifier that comprises a hydrophobically modified polymer. As such, the cited reference does not anticipate this claim.

Therefore, Applicants respectfully assert that independent claim 127 its dependent claims are not anticipated by *Mallon*. Accordingly, Applicants respectfully request withdrawal of this rejection with respect to claims 127, 130-132, 137-141, 144, 145, and 147.

VI. Remarks Regarding Rejections Under 35 U.S.C. § 103(a)

Claims 1, 3-5, 10-14, 21, and 24-29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Mallon* in view of *Couillet*. With respect to this rejection, the Office Action states:

> Mallon was discussed above in the instant action and all the arguments and grounds of rejection therein are incorporated herein in their entirety. Mallon does not expressly disclose "injecting" the fluid into the formation.
>
> However, Couillet teaches that it is routine in the oil field drilling/treatment fluid art to inject specialized fluids via a well bore into a subterranean formation to, e.g., stimulate hydrocarbon production. (Page 1, lines 15-25) Couillet further teaches that fluids are commonly injected into a formation at a sufficient pressure to, e.g., create fractures in the formation rocks by which hydrocarbons may readily flow into the well bore (hydraulic fracturing). (Page 19, line 34 to page 20, line 9)
>
> Therefore, it would have been obvious to one in the art at the time that the claimed invention was made to introduce the drilling/treatment fluid composition disclosed in Mallon into a well bore via an injection technique. It would have been obvious to one skilled in the art to do so because injecting fluids into a well bore is a routine form for delivering a fluid to a subterranean formation surface with sufficient pressure to thereby attain a resultant method of treating/drilling that, *inter alia*, provides enhanced hydrocarbon production as taught by Couillet.

Thus, the instant claims are unpatentable over Mallon and Couillet.

(Office Action at 8-9.) Applicants respectfully disagree.

In order for a reference or combination of references to form the basis for a rejection under § 103(a), the reference or combination of references must teach or suggest all of the elements of the claim. As discussed above in Section V, *Mallon* fails to teach the element of "performing an injection operation in a subterranean formation penetrated by at least one injection well and at least one production well," which is recited in independent claim 1. Moreover, as discussed above in Section IV, *Couillet* also fails to teach this same element. Nor has any motivation or other apparent reason known to a person of skill in the art for such a modification been provided. Claims 3-5, 10-14, 21, and 24-29 depend, either directly or indirectly, from claim 1 and therefore includes all the limitations of that independent claim. Thus, claims 1, 3-5, 10-14, 21, and 24-29 are patentable over the combination of *Mallon* and *Couillet*. *See* 35 U.S.C. § 112 ¶ 4 (2004). Accordingly, for at least these reasons, Applicants respectfully request withdrawal of this rejection with respect to claims 1, 3-5, 10-14, 21, and 24-29.

VII. Request for Rejoinder of Withdrawn Claims

Claims 100-106, 111-126, 133-136, 142, 143, 149-151, and 155-157 have been withdrawn from consideration. Withdrawn claims 100-105, 150, and 156 depend from independent claim 1. Withdrawn claims 133-136, 142, 143, 151, and 157 depend from independent claim 127. Withdrawn claims 111-126, 149, and 155 depend from withdrawn independent claim 106. Accordingly, once the Examiner determines that the present independent claims are allowable, Applicants request rejoinder of the withdrawn claims, including examination of the formerly nonelected species on the merits. In addition, because independent claims 1 and 127 are in condition for allowance for the reasons stated above, Applicants respectfully submit that claims 100-105, 133-136, 142, 143, 150, 151, and 157 are also in condition for allowance. Therefore, Applicant requests that the Examiner provide an indication of allowance for claims 100-105, 133-136, 142, 143, 150, 151, and 157.

VIII. No Waiver

All of Applicants' arguments and amendments are without prejudice or disclaimer. Additionally, Applicants have merely discussed example distinctions from the cited

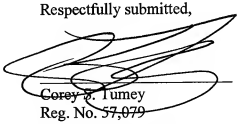
references. Other distinctions may exist, and Applicants reserve the right to discuss these additional distinctions in a later Response or on Appeal, if appropriate. By not responding to additional statements made by the Examiner, Applicants do not acquiesce to the Examiner's additional statements, such as, for example, any statements relating to what would be obvious to a person of ordinary skill in the art.

SUMMARY

In light of the above remarks, Applicants respectfully request reconsideration and withdrawal of the outstanding rejections. Applicants further submit that the application is now in condition for allowance, and earnestly solicit timely notice of the same. Should the Examiner have any questions, comments, or suggestions in furtherance of the prosecution of this application, the Examiner is invited to contact the attorney of record by telephone, facsimile, or electronic mail.

Applicants believe that no fees are due at this time. Should the Commissioner deem that any fees are due, including any fees for extensions of time, Applicants respectfully request that the Commissioner accept this as a petition therefor, and direct that any fees be charged to the Deposit Account of Baker Botts L.L.P. (No. 02-0383, Order Number 063718.0331).

Respectfully submitted,



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